

AUTOMATIC GAIN CONTROL FOR A CONFOCAL IMAGING SYSTEM

Abstract

Automatic gain control is provided for a confocal imaging system to improve the quality
5 of images produced by the system. The confocal imaging system utilizes an illumination source,
such as a laser, to produce illumination which enables imaging of an object. The automatic gain
control is provided by an automatic gain controller which receives a raster scan video of two-
dimensional frames of images from the confocal imaging system, converts the raster scan video
into pixels, where each pixel has a brightness value, and then counts, in each frame, the number
10 of pixels which are too bright, the number of pixels which are too dim, and the total number of
pixels. After each frame is received, the laser of the confocal imaging system is controlled in
accordance with signal(s) produced by the automatic gain controller, whereby the power to the
illumination source is reduced when the number of pixels too bright exceeds a number
representing a first percentage of the total pixels of the frame, and the number of pixels too dim
15 is greater than a number representing a second percentage of the total pixels of the frame, and the
power of the illumination source is increased when the number of pixels too dim is less than the
number representing the second percentage of the total pixels of the frame, and the number of
pixels too bright in the image is less than the number representing the first percentage of the total
pixels of the frame. The automatic gain controller may be operative over either the entire frame
20 of the image, or a rectangular region in the image.